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ABSTRACT

Now that demands on schools are greater than at any other time in history, a need exists for synthesis and interpretation of the vast amount of research and information to assist schools in solving educational problems. Despite the availability of storage and retrieval systems and new technologies, most local schools are not using this information because it is not in a form that is useful. New roles are proposed for university faculty--to serve as linking agents between information systems and local schools in the university's service area. An interactive model is suggested that involves a combination of generalist facilitators and specialists/synthesizers/interpreters who work directly with schools on improving programs and practices. This arrangement benefits the participating university in staff development and research capabilities. It is not without potential problems, however: funding; locating faculty with the requisite areas of expertise; and training the faculty linking agents in applied social and behavioral sciences. (Author/FG)

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SYNTHESIS AND INTERPRETATION OF KNOWLEDGE: NEW ROLES FOR UNIVERSITY FACULTY IN SCHOOL IMPROVEMENT PROGRAMS

A Concept Paper by

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at the

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THE ASSOCIATION OF TEACHER EDUCATORS

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INTRODUCTION

The demands for cost effective quality public education are greater today than at any time in history. Amidst tightening budgets and an inflationary economy, schools are required to provide equality in education, implement the regulations of Public Law 94-142, offer quality instruction in basic skills, prepare students for competency testing, and plan more effective discipline programs, only to name a few of the public expectations for schooling in America.

In an effort to solve educational problems each year, schools across the country introduce new programs and innovative practices aimed at improved learning outcomes. However, in studies reported by Mann (1976), Corwin (1973), and Herriot and Gross (1979) a great majority of programs initiated never become widely adopted as part of the total school program, and very few change efforts achieve their intended goals. Furthermore, it is evident from these studies that only a fraction of the existing knowledge base is being utilized by schools, either with respect to the process for adopting innovations or with respect to the content of the new programs and practices attempted.

This failure of education to better utilize the existing knowledge base is most ironic when one considers that the educational enterprise today has at its disposal very sophisticated information storage and retrieval systems coupled with advanced technology. A fundamental reason why so little attention is given to existing knowledge and research base in planning school improvement programs is that most school systems do not have the ability or the means to tap into the existing bank of research and development resources. The problem goes far

beyond merely having access to the many data files like ERIC. It is a matter of being able to sythesize the vast amount of information on a given topic and interpreting the meaning of the existing knowledge base to local educational problems.

As part of a recent survey, Roberts (1980) identified 85 federal and/or state supported groups charged with a dissemination responsibility or having goals related to effective use of R & D outcomes. Among these were 37 state dissemination capacity-building projects, 16 ERIC clearing houses, 14 Research and Development Exchange programs (RDx), 11 Regional Offices of Educational Programs (ROEP), and 7 Research and Development Utilization Projects (RDU). While this multimillion-dollar effort has greatly improved the dissemination of information to the educational community, it has not provided the needed assistance to local districts in solving their educational problems. This system is analogous to funding 85 medical centers across the country to deal effectively with the health-care problems of the total population. While the ERIC clearing houses, the regional laboratories, and the state capacity building programs are essential to the dissemination process, an intermediate linking agent between these information centers and the practitioners in local schools is needed.

A logical task force group to fill this void in linking the vast knowledge and research base to the school improvement programs are the faculty in teacher education programs at regional colleges and universities across the country. Because of the university's existing resources, ongoing relationships with schools in its service area, and relative proximity to the client, it would seem that developing new roles for faculty as linking agents would greatly enhance its mission of research service and instruction. A faculty

member's primary responsibility in this role would be (1) to assist local schools and school districts to clarify their needs, (2) to collect and synthesize information related to the local school problem identified, and (3) to interpret and communicate the requested information in a manner that is understandable and helpful to practitioners in the school.

The benefits from establishing a synthesis interpretation and dissemination role for teacher education faculty are many. First of all, it would encourage a more scientific process approach to solving school problems and adopting new educational practices. Second, it would provide a vehicle for continued ongoing interaction between the field and the teacher education institution. Third, it would encourage staff development on the part of the teacher education faculty member responsible for the synthesis and interpretation of the knowledge and research base. Fourth, it would enhance the image of the teacher training institution as resource center with faculty who have established areas of technical expertise. Fifth, it would positively impact the instructional program because of the "theory into practice" experience gained by the faculty member in this new role. Finally, this type of synthesis and interpretation involvement would provide an opportunity for continued research on the process of planning, developing, and implementing school improvement programs.

In a very real sense, the synthesis, interpretation, and dissemination of knowledge and research for application to local school problems should be a natural role for all university teacher educators. However, because of the traditional emphasis of normal schools on heavy teaching loads and the supervision of clinical experiences, the mission of research and expert services has been short changed.

THE PROCESS OF SYNTHESIS AND INTERPRETATION OF KNOWLEDGE

Synthesis is defined by Webster's new Collegiate Dictionary (1974) as "the composition or combination of parts or elements so as to form a whole... the dialectic combination of thesis and antithesis into a higher stage of truth."

Rich and Goldhar (1977), in writing specifically about the dissemination of educational information, refer to synthesis as a process and offer the following definition:

> Knowledge synthesis has traditionally been thought of as an effort to collate, compare and/or interpret the current body of scientific and technical knowledge, including research results, outcomes of systematic development, theoretical and speculative writing and evaluations of current field practices.

Smith (1977), in a discussion of information analysis activities conducted at ERIC clearing houses, makes the following comment regarding interpretive synthesis:

> Interpretive informationanalysis products are particularly useful for practitioners because they explain the signficance of research findings. Interpretive review points out trends in the literature; they show, for example, where the authors are in agreement and when they are in disagreement. On topics with a large body of research literature that contains conflicting findings, interpretative reviews help the reader to understand quickly what evidence exists for the different conclusions.

A recent study was conducted by Roberts (1980) to determine the current processes and activities of persons engaged in synthesis and interpretation efforts throughout the states. Responses were received from 42 key individuals and agencies around the country regarding the processes they used as state capacity building projects and R & D Exchange units. While there was a considerable variation of responses on most items in the survey, there was agreement on eight criteria for client responsive synthesis/interpretation of information.

In addition, there was a general consensus on the following items that relate directly to the processes of synthesis interpretation:

- In the development of client-responsive S/Is which are rapid turnaround or reasonable short-term, the following areas of activity are essential: I -- clarification of the request (search negotiation); II -- search and retrieval of information; III - selection and organization of information (analysis); IV -- fit of information and framework (synthesis/interpretation); V -- design and development of the S/I product and delivery system; VI -- delivery.

- In producing a tailored S/I, the success of all subsequent activities and the usefulness of the final product are dependent upon the effectiveness of the search negotiation/request clarification.

- It is desirable to use all three methods of search and retrieval -- computer, manual, and human resource contact.

- Relevance (to the client's task/need) is the key criterion for selection. It is desirable to satisfy the criteria of repetition, completeness, and cohesion (rather than pressure of time) in concluding the analysis of the information collected.

- To claim synthesis, the information must be integrated (not simply collected); to claim interpretation, the language and format used must be appropriate for the client and relevant to the client's task.

- The S/I product and delivery system should be designed to be complementary and to be of maximum potential use to the client.

- In-person delivery of S/Is is most desirable.

- A fixed response-set -- where the design of the product and delivery method is predetermined and routinized -- can be used for traditional and hot topic S/Is, but cannot be used for tailored S/Is.

- A philosophy emphasizing the effective delivery of information (rather (than technical assistance and/or training) is more appropriate for traditional and hot topic S/Is than for tailored S/Is.

- A philosophy emphasizing technical assistance and/or training suggests that the delivery of tailored S/Is includes opportunities for dialog between the client and the synthesizer/linker and/or simulation of use of the information.

- A "tailored" S/I can be produced in a three-week turnaround time, with the 15 work days divided approximately in half -- eight for professional tasks and seven shared equally between technical and clerical tasks. Such an arrangement may be referred to as rapid turnaround S/I.

- A "tailored" or "hot topic" S/I produced in a six to eight week turn-around time includes "wait" time and time for incubation of ideas. Work days are allocated approximately as follows: technical -- 5; professional -- 15; clerical -- 5. This arrangement may be referred to reasonable short-term S/I.

- Skills required in synthesis/interpretation activity include those relating to critical thinking, oral and written communication, and creativity. When the S/I is in response to a client in a hurry, an additional skill is needed -- the ability to balance interacting factors. These factors are the pressures of time and resources, the client's need and preferences, and the integrity of the knowledge base.

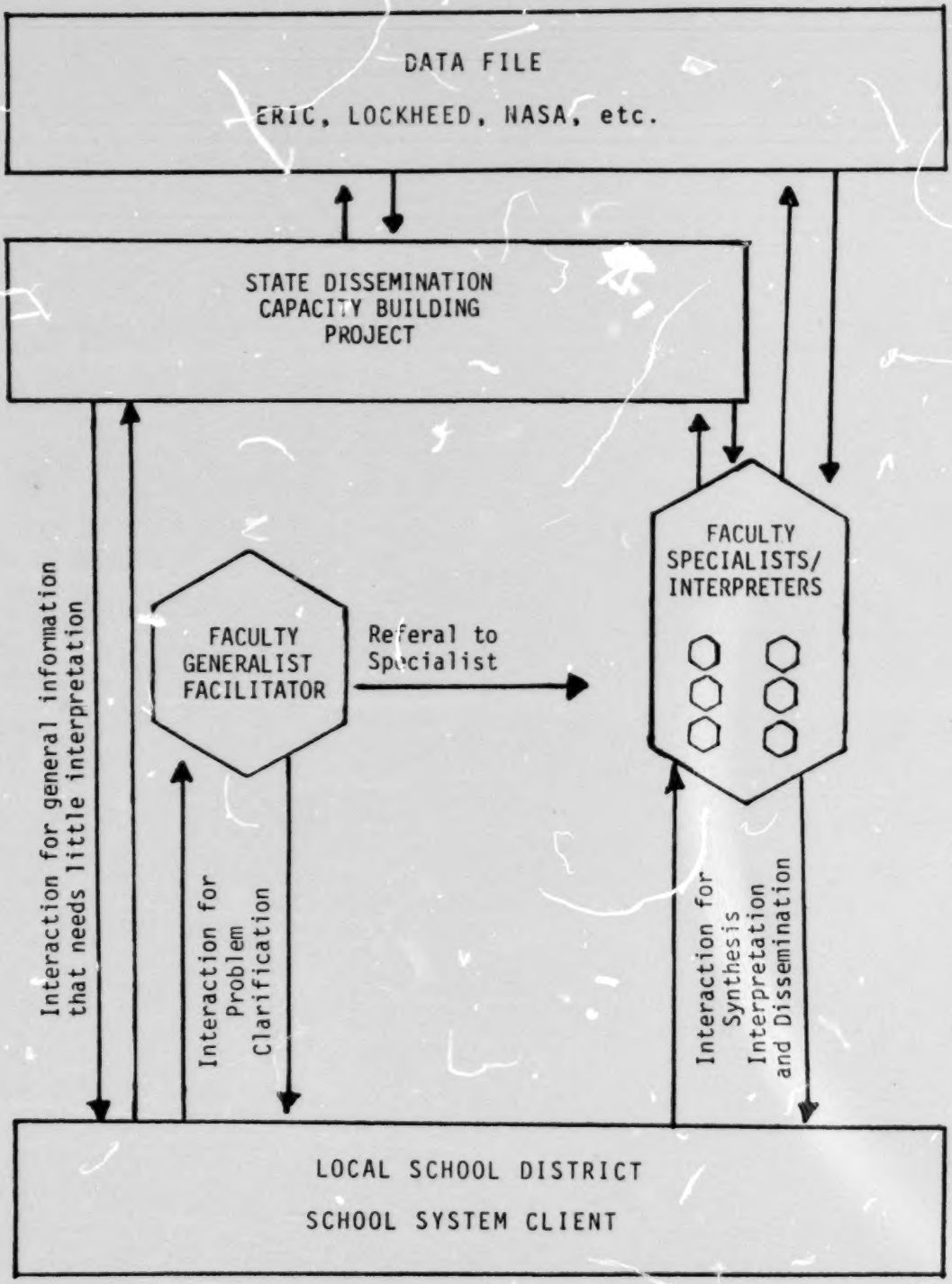
AN INTERACTIVE MODEL FOR THE SYNTHESIS, INTERPRETATION, AND DISSEMINATION OF INFORMATION

In an effort to assist schools in planning educational improvements, it is proposed that schools and colleges of education establish an interactive linking network of services for the purpose of synthesizing, interpreting, and dissiminating research knowledge and information specific to local district concerns.

To successfully operate the proposed model would require the following components:

1. Access to appropriate data files and information retrieval systems.
2. Cooperation with a state capacity building project.
3. Several faculty who can serve as generalist facilitators to help school district personnel clarify their concern or area of need and agree on a general improvement process.
4. A cadre of faculty who are willing to serve as specialist synthesizers and interpreters of information and who collectively have expertise in a broad range of content areas.
5. A number of school districts in the service area of the university who are interested in solving specific educational problems and in planning long-term school improvement programs.

Figure 1 presents a paradigm of the interactive model for the synthesis and


DATA FILE
ERIC, LOCKHEED, NASA, etc.
STATE DISSEMINATION CAPACITY BUILDING PROJECT
FACULTY SPECIALISTS/ INTERPRETERS
FACULTY GENERALIST FACILITATOR
Referal to Specialist
Interaction for general information that needs little interpretation
Interaction for Problem Clarification
Interaction for Synthesis Interpretation and Dissemination
LOCAL SCHOOL DISTRICT
SCHOOL SYSTEM CLIENT

THE INTERACTIVE MODEL FOR THE
SYNTHESIS AND INTERPRETATION OF INFORMATION

Figure 1

interpretation of information. The proposed model would operate in a manner analogous to the medical clinic model with the generalist facilitators having a role similar to the general practitioner and the specialist/synthesizer/interpreter of information having a role similar to a medical clinic specialist. The various data files like ERIC, coupled with the information retrieval systems would be analogous to the drugstore, the pharmacy and other medical resources available to the medical client.

Administrators or key informal leaders of a local school district who sense an area of need and are interested in a school improvement effort may already have a clear understanding of the problem and know what information they want or what specific program they would like to initiate. If so, they can request information directly from a state capacity building project or an information data file.

If, however, the educational problem in the school is not clear or of a complex nature such that expert facilitation and technical assistance is required, the university interactive linking network would be contacted for services. A faculty member who is a generalist but who possesses expertise in facilitation would then work with the formal and informal leaders of the school or school district to help them clarify the problem area and facilitate an agreement on a general processfor program planning and development. This may involve helping the local district to assess the concerns and perception of teachers and parents toward the identified need area or securing general information about a new program. If the situation calls for expertise in a given content area such as reading, exceptional child education, motivation, discipline, or remedial English, the generalist facilitator would contact the appropriate member of the cadre of specialists in synthesis and interpretation

to work with the school or school district throughout the planning and development process.

The first major function of the specialist/synthesizer/interpreter would be to interact with planners and managers of the school improvement effort to determine what research information is needed to better understand the area of concern and what information is needed to make rational decisions about actions that bring about an improvement in the school program. Once the specialist has a reasonable understanding of the information that is needed, he/she would return to campus to search out, synthesize and interpret the knowledge base in the concern area and relate this specifically to the local school situation. To conduct the information search, the specialist may (1) ask for help from the state dissemination capacity building program, (2) use the facilities of the university to directly access the various data files and locate published documents, or (3) contact colleagues to tap their knowledge and ideas on the school improvement effort. The faculty member would not only gather and summarize the existing information, but he/she must synthesize it and interpret the data in a format that is communicable to the school district personnel.

Once the synthesis and interpretation of information on the topic of concern has been prepared, the faculty member would return to the school-client group to present the information. For example, if the area of concern were discipline, the specialist might present an overview of the various conceptual frameworks that educators and behavioral scientists use to deal with school discipline. The specialist also might share how different belief systems relate to the success of different approaches in different situations, what seems to work and not work in given situations, what principles guide each different approach, and what programs are in operation that exemplify different approaches to

school discipline. The purpose of the presentation would be to help the client better understand the broad area of discipline and be able to apply this knowledge to decisions about alternative solutions.

The responsibility of the specialist would not end with the presentation of the synthesis and interpretation report, but he/she would continue to offer technical assistance to the school district throughout the planning and development process of a school improvement program to deal with school discipline. For most situations this would include assistance with staff development.

Thus, each specialist in the cadre of synthesizers and interpreters of information would have a case load of schools that would be integrated with their teaching load at the university. Synthesis and interpretation products used to assist one school on a given topic would have carry-over value for another school dealing with the same topic. Also, as faculty members developed an increased knowledge base on a given topic, their level of expertise would increase and their competence as an instructor would be enhanced. With appropriate coordination and management, the proposed interactive model for assisting schools in improvement programs could serve as the primary staff development activity of a college of education while providing local schools with a needed service that only institutions of higher education can provide.

PROBLEMS RELATED TO THE SYNTHESIS AND INTERPRETATION OF INFORMATION

While the interactive model to assist schools in educational improvement may provide benefits to both school systems and institutions of higher education, implementing such a program is not without some very practical problems. Several of these are discussed in the following section.

Funding Personnel Costs

Faculty members in colleges and universities do not work free of charge, and it is evident that to operate a synthesis interpretation service involves a considerable amount of personnel costs. In the years of "The Great Society" and expanding teacher education programs, there was fat in university budgets to provide a reasonable amount of services to schools; however, the education community has fallen on hard times.

In spite of the present-day budget crunch, a variety of strategies are being employed to fund moderate amounts of research and service. Some colleges of education are providing small incentive grants to individual faculty for research and service to schools through Dean Grants and Teacher Corps funds earmarked for dissemination. Other institutions have formed professional development center networks with a number of school districts to pool their money for school improvement efforts. Some states like Florida have legislation that legitimizes using university faculty time to provide technical assistance to schools. Western Kentucky University provides small research and development grants to faculty on a competitive basis that range from $300 to $1,200. While the dollar amounts are small, they have gone a long way to encourage faculty to become involved in research and service activities.

Providing a Cadre of Specialists that Reflect the General Needs of School Districts

One of the most difficult tasks in attempting to serve the needs of local schools is to locate faculty with expertise in the concern areas of school districts. For example, during the past three years, school discipline has been a "hot topic" in the Western Kentucky University service area. With a limited number of faculty who have expertise in school discipline, it has been

extremely difficult to supply competent facilitators and trainers to all the schools which want to develop improved discipline programs. Attempts have been made to help faculty develop more expertise in school discipline. While this strategy has increased the faculty pool to work with schools in the area of discipline, most school districts want the seasoned expert with a track record rather than a retooled staff member with average skills.

Training Faculty to Do Quick Turn-Around Synthesis and Interpretation of Information

The specific processes of synthesis and interpretation are not well understood. The science of the synthesizing large amounts of complex ideas and information is still in its infancy. Consequently, it is difficult to plan training programs to assist faculty members in developing skills of synthesis and interpretation when these have not been clearly identified.

From experience, it is evident that one cannot assume that all teacher education faculty possess the necessary competencies for synthesizing and interpreting research information. If faculty memebers fail to possess these competencies, can they be taught, or are these natural skills? If synthesis can be taught, what instructional strategies would be most useful? Little has been written or researched on this topic.

Organizing Social and Behavioral Science for Application

Anyone who has been involved in a team effort of synthesizing information is acutely aware of differences in opinion about what should be included and what points should be emphasized. Strike and Posner (1980), in discussing the epistomological problems in organizing research for application, point out that people will perceive the world differently in ways which reflect differences

in purpose, context, disciplinary perspectives, and even moral points of view. Thus, a synthesis on the topic of integration may be perceived very differently by the disciplined social scientest and the school superintendent with the concern of meeting a legal mandate. Seeing a problem from the client's point of view may mean adopting a moral stance that may be in opposition to that of the specialist/synthesizer/interpreter. Experience suggests that this problem is more real than most teacher educators realize. It is one that makes a client-responsive synthesis/interpretation difficult, if not impossible, in certain situations.

SUMMARY

At a time when the demands on schools are greater than at any time in history, there exists a need for synthesis and interpretation of research and information to assist schools in solving educational problems. In spite of the tremendous advances in storage and retrieval systems coupled with new technologies, most local schools are not utilizing information available to them because it is not in a form that is useful. New roles are proposed for university faculty to serve as a linking agent between information systems and local schools in the university's service area. An interactive model has been suggested that involves a combination of generalist facilitators and specialist/synthesizers/interpreters who work directly with schools on improvement programs and practices. While providing needed assistance to schools and school personnel, this arrangement has benefits to the university in staff development, research, and service. Even though the linking agent concept has promise for a cooperative effort in solving educational funding, such a program, staffing it with faculty who possess expertise in the appropriate content areas, and training faculty for synthesis/interpretation are concerns that must be resolved.

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